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The construction of an imaginary acoustic space

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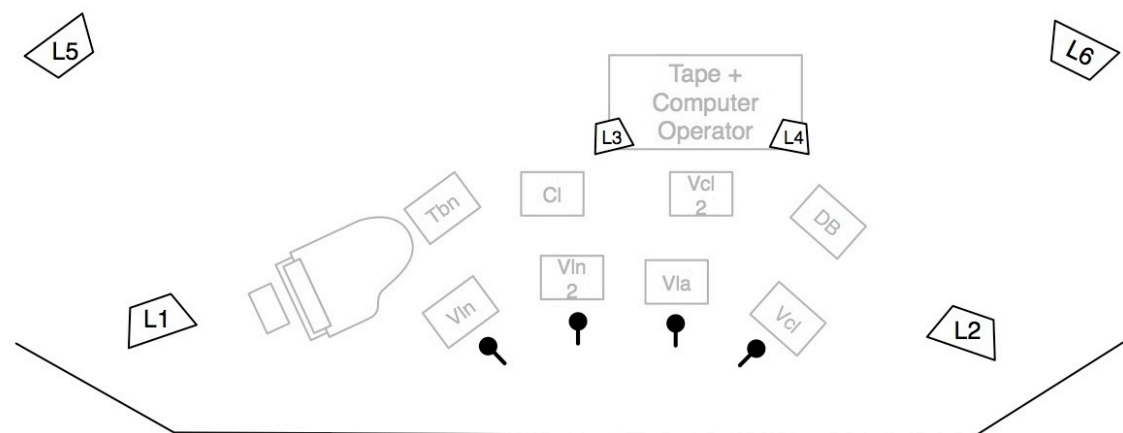
Gabriel Paiuk

The construction of an imaginary acoustic space

for 2 violins, viola, 2 violoncelli, double bass, clarinet, trombone, piano and soundtrack operator

2018

Stage Plan and soundtrack operation



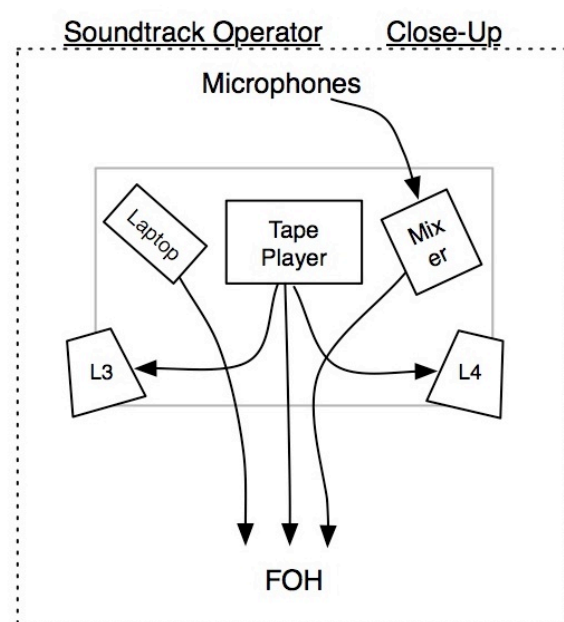
- The soundtrack for "The Construction of an Imaginary Acoustic Space" is comprised of two pre-recorded layers, both of them operated by a musician specifically devoted to this task and located on stage. The *soundtrack operator* controls three devices: a computer (with its corresponding soundcard), an open-reel 1/4 inch tape player, and a small mixing desk that controls the amplification of the four string instruments on the front row of the ensemble. These three devices will be placed on a table on stage (see diagram)

- The computer setup requires a 4-channel output sound card (*) and the Reaper software installed.

(<https://www.reaper.fm/download.php>).

The digital soundtrack will be provided in the form of a Reaper session and its corresponding set of audio files. The operator triggers segments of this session through the use of numerical markers, following indications in the score. The first segment will be triggered coincidentally with the beginning of the piece.

The output signal of the sound card will be sent to the Front Of House where it will be

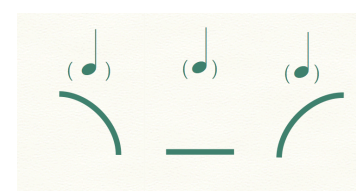


routed to the 4-channel P.A. system (L1, L2, L5 and L6 as seen on the stage diagram and close-up).

(*) L5 and L6 are meant to create a reflected wave-front with a significantly diffused and diverse sound quality than L1 and L2. In the case it is not possible to count with these extra set of channels/loudspeakers, the signal from the soundtrack will be sent only to channels 1-2

- A tape for the open-reel machine is provided. This tape should be set to start playing at the beginning of its playable surface (just immediately after the blue "lead tape"). It will start playing coincidentally with the beginning of the piece.

Throughout the performance the *soundtrack operator* will manually alter the movement of the rolling tape, either by stopping its rotation or by slowing it down. The series of actions required from the operator are indicated in the score using the following graphic signs:



This sign indicates three consecutive steps: 1) the operator applies a gradual force into the left reel until the reel stops rotating. 2) The operator keeps the reel stopped for a brief moment 3) the operator lifts off the pressure of the hand gradually so as to let the reel to rotate freely again. Each of these three steps takes approximately 1 beat of duration.



The operator interferes briefly on the left reel by applying moderate pressure, slowing down for a moment its rotating movement and creating a pitch ondulation. The the reel should not come to a complete halt



The operator should stop the reel from rotating. In this case the movement is more abrupt (not gradual) and the reel will remain stopped for a longer period, until the "START" sign indicates that it should be "let" free to rotate again (depending on the functionality of the machine, the "pause" button can be used).

The following video provides an impression of the kind of action intended

https://www.dropbox.com/s/rdtnwazae0oqsj6/GPaiuk_OENM_TapeOperationSample_SHORT.m4v?dl=0

The output of the tape is routed both to the two small monitor loudspeakers placed on the table on stage and to the FOH for reinforcement through L1 and L2 (see diagram).

- The string instruments at the front line of the ensemble will be amplified only on certain brief segments in the piece. The signal from the 4 microphones used to amplify these instruments is sent to the small mixer on the table of the operator and kept on "mute" until the operator has the indication to alternatively "unmute" and "mute" again the signal.

This signal, in the form of a stereo mix, will be sent to the FOH and from there routed to L1 and L2 (see diagrams).

References and Playing techniques

For All



¼ tone higher or lower



Microtonal variation, slightly higher or lower, always smaller than a quarter tone

Note: Except on those occasions where *crescendos* and *decrescendos* are applied to the beginning and ending of the sounds, all attacks and endings should be played tenuto.

For Strings



Mute symbol. Lay the left hand on all four strings so that they are prevented from vibrating. Result should be a noise-like sound, with very few pitch content when realised in col legno tratto playing.

Scratch

"Scratch" sound. Achieved by added bow pressure. This should result in a dry, controlled, rattling sound. The bow is to be drawn slowly but not haltingly.



Bow actions

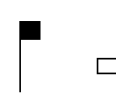
C.L.T. Col Legno Tratto: Draw the wood of the bow across the strings (horizontally).

½ C.L.T. ½ Col Legno Tratto: Draw the bow across the strings holding it at an angle which allows an equal proportion of wood and hair to remain in contact with the string.

Very slow Bowing. Draw the bow at an extremely slow speed. The result should be a fragile, slightly noisier and unstable sound.

For Clarinet and Trombone

Air sounds



The square notes indicate a toneless sound of breath noise with no pitch at all. The prescribed pitches indicate fingerings resulting in varying degrees of brightness, spectrum, and projection of the "air" sound.

"Air sounds" should by no means be considered as amplifications or representations of the action of breathing. There should not be any additional crescendos or decrescendos at the beginning and ending of these sounds. In this kind of sound production, focus on using a rather small (compressed) oral cavity to be able to generate a considerable amount of air pressure without big wastes of air.

For the clarinet: the letters shown above the beginning of the air sounds indicate the type of oral cavity to be used in each occasion. They do not imply an imitation of the sound of the letter but serve mainly to indicate a variation in tongue position.

Transposition: Clarinet sounds a major second lower than written and Double-Bass sounds an octave lower than written

Total Duration: 19 minutes

Commissioned by Österreichisches Ensemble für Neue Musik

The Construction of an Imaginary Acoustic Space

♩ = 60

1 A

Clarinet in B \flat

Trombone

Piano

Violin 1

Violin 2

Viola

Violoncello 1

Violoncello 2

Double Bass

Computer

Tape Player

9

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc. 2

D.B.

Comp

Tape

The musical score for page 2, measures 9 through 16, is as follows:

- Measures 9-15:** B♭ Cl., Tbn., Pno., Vc. 2, and D.B. have rests. Vln. 1, Vln. 2, and Vla. play a melodic line consisting of quarter notes with slurs.
- Measure 16:** B♭ Cl., Tbn., Pno., Vc. 2, and D.B. have rests. Vln. 1, Vln. 2, and Vla. have rests. The Tape section contains performance markings: a quarter note with a slur, a quarter rest, a quarter note with a slur, and a fermata.

17

B♭ Cl.

17

Tbn.

17

Pno.

17

Vln. 1

17

Vln. 2

17

Vla.

17

Vc. 1

17

Vc. 2

17

D.B.

17

Comp

Tape

sul tasto

sul pont

mp

25
B♭ Cl.

25
Tbn.

25
Pno.

25
Vln. 1

25
Vln. 2

25
Vla.

25
Vc. 1

25
Vc. 2

25
D.B.

25
Comp

25
Tape

1/2 C.L.T.

arco

33

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc. 2

D.B.

Comp

Tape

sul pont

sul tasto

sul pont

sul tasto

2

41

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc. 2

D.B.

Comp

Tape

gliss.

mf

gliss.

gliss.

3

3

3

STOP

49 B

B♭ Cl. *mp* *p* *mp* *mp*

Tbn. *p* *pp* *p* *p*

Pno. *mf*

Vln. 1 *mf* *p* *mp* *mf*

Vln. 2 *mf* *p* *mp* *mf*

Vla. *mp* *mp*

Vc. 1 *mp* *mp*

Vc. 2 *mp* *mp*

D.B. *p* *p*

Comp

Tape *PLAY*

57

B♭ Cl. *p* *mp* *mp* *mp*

Tbn. *mp*

Pno.

Vln. 1 *mp* *mf* *mp* *mp*

Vln. 2 *mp* *mf* *mp* *mp*

Vla. *p* *p* *mp* *mp*

Vc. 1 *mp* *mp* *mp* *mp*

Vc. 2 *p* *mp* *mp* *mp*

D.B. *pp* *p* *mf*

Comp

Tape

Poco Vibrato *Senza Vibrato*

mp *mf* *mp* *mp*

pp *p* *mf*

C

65

B♭ Cl.

Tbn.

Pno.

mp

Vln. 1

p

sul pont

Vln. 2

p

sul pont

Vla.

p

Vc. 1

p

Vc. 2

p

D.B.

flautato
Light bowing

pp *mp*

flautato
Light bowing

pp *mp*

flautato
Light bowing

pp *mp*

flautato
Light bowing

pp *mp*

flautato
Light bowing

pp *mp*

Comp

Tape

73

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc. 2

D.B.

Comp

Tape

mp *mf*

mp *mf*

mp *mf*

mp *mf* *p*

mp *mf*

mp *mf* *p*

mp *mf*

mp *mf*

mp *mf*

mp *mf*

Very slow bowing

Very slow bowing

ordinarie

73	3	-	-	-	-	-	-

81

B♭ Cl. *mp*

Tbn. *mp*

Pno. *mp* *mf*

Vln. 1

Vln. 2

Vla.

Vc. 1 *mf*

Vc. 2 *mf* *rit*

D.B. *mf*

Comp

Tape STOP PLAY

Detailed description of the musical score: The score is for page 11, measures 81 through 88. It features a variety of instruments: B♭ Clarinet, Trombone, Piano, Violin 1, Violin 2, Viola, Violoncello 1, Violoncello 2, and Double Bass. The Piano part is particularly active, with a triplet in measure 85 and a five-note run in measure 88. The strings (Violins, Viola, Cellos, and Double Bass) play sustained chords with long breath marks. The Clarinet and Trombone parts are mostly rests, with some notes in measures 81-82. The Compressor and Tape tracks are at the bottom, with the Tape track showing 'STOP' and 'PLAY' instructions in measures 83 and 85 respectively.

89 **D**

B♭ Cl. *pp*

Tbn. *pp*

Pno. *mf* *f*

Vln. 1 *n.* *p*

Vln. 2

Vla. *ordinario* *n.* *p*

Vc. 1

Vc. 2 *ordinario* *p* Small Vibrato

D.B. *p* Small Vibrato

Comp

Tape *p* STOP

97

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc. 2

D.B.

Comp

Tape

pp *pp* *mp*

p *mf*

mf

pp *pp* *p* *p* *p* *p*

C.L.T. Damped

p *mf* *pp* *p*

sul pont

mf *p*

mf *p* *pp* *p*

mf *p*

Senza Vibrato

Senza Vibrato

PLAY

B♭ Cl. *mf* *mp* *p* *f* *mp*

Tbn. *mp*

Pno.

Vln. 1 *mp* *p* *f* *mp*

Vln. 2 *p* *f* *mp*

Vla. *p* *f* *mp*

Vc. 1 *mf* *mp*

Vc. 2 *mf* *mp*

D.B. *mp*

Comp	-	-	-	-	-	z y (4)	-	-
Tape								

113

B♭ Cl. *mp*

Tbn. *mp*

Pno. *mf*

Vln. 1 *mp* *mp*

Vln. 2 *mp* *mp*

Vla. *mp* *mp*

Vc. 1 *mp*

Vc. 2 *mp* *mp* III

D.B. *mp* *mp* *allegro*

Comp

Tape

STOP

121

B♭ Cl. *p*

Tbn.

Pno. *mf*

Vln. 1

Vln. 2 *mf* *pppp* *mf*

Vla. *mf* *pppp* *mf*

Vc. 1 *mf* *pppp* *mf*

Vc. 2 *mf* *pppp* *mf*

D.B.

Comp

Tape

PLAY

Detailed description of the musical score: The score is for page 16, starting at measure 121. The B♭ Clarinet part begins with a piano (*p*) dynamic and a crescendo leading to a decrescendo. The Trombone part is mostly silent. The Piano part has a mezzo-forte (*mf*) dynamic. The Violin 1 part has a mezzo-forte (*mf*) dynamic. The Violin 2 part starts with a mezzo-forte (*mf*) dynamic, then moves to pianissimo (*pppp*) with a crescendo, and ends with a mezzo-forte (*mf*) dynamic. The Viola part follows a similar pattern to Violin 2. The Violoncello 1 and Violoncello 2 parts also follow this dynamic pattern. The Double Bass part is mostly silent. The Compressor and Tape parts are represented by a grid with a 'PLAY' button at the end.

129

B♭ Cl.

129

Tbn.

129

Pno.

mp

129

Vln. 1

129

Vln. 2

129

Vla.

129

Vc. 1

129

Vc. 2

129

D.B.

129

Comp

5

Tape

137 **E**

B♭ Cl. *mf* *mp*

Tbn. *mf* *mp*

Pno. *mf* *pp*

Vln. 1 *mf* *mp*

Vln. 2 *mf* *mp*

Vla. *mf* *mp* *mf* Slow Vibrato

Vc. 1 *mf* *mp* *mf* Slow Vibrato

Vc. 2 *mf* *mp* *mf* Slow Vibrato

D.B. *mf* *mp* *mf* Slow Vibrato

Comp

Tape

145 [SH] [RR]

B♭ Cl. *mf*

Tbn. *mf*

Pno. *mp*

Vln. 1 Vibrato Senza Vibrato *mf* *p* gliss.

Vln. 2 Vibrato Senza Vibrato *mf* *p* gliss.

Vla. Senza Vibrato Very slow bowing *p* gliss.

Vc. 1 Senza Vibrato

Vc. 2 Senza Vibrato *mf* *mf* gliss.

D.B. Senza Vibrato

Comp

Tape

153

B♭ Cl. *mf*

153

Tbn. *mf*

153

Pno.

153

Vln. 1 *gliss.* 3

153

Vln. 2 *gliss.* 3

153

Vla. *gliss.* 3

153

Vc. 1

153

Vc. 2 *gliss.* 3

153

D.B.

153

Comp

Tape

7. (6)

161

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc. 2

D.B.

Comp

Tape

mf

mp

sul tasto

STOP

169 F

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc. 2

D.B.

Comp

Tape

177

B♭ Cl.

177

Tbn.

177

Pno.

177

Vln. 1

177

Vln. 2

177

Vla.

177

Vc. 1

177

Vc. 2

177

D.B.

177

Comp

Tape

mf

mf

mf

185

B♭ Cl. *p*

Tbn. *p* PIXIE mute Hold straight Mute

Pno. *f* *mp* *mf*

Vln. 1 *p* *p* *mf*

Vln. 2 *p* *mf* C.L.T.

Vla. *p* *p* *mf* *p*

Vc. 1 *p* *p* *mf* C.L.T.

Vc. 2 *p* *mf* *p* C.L.T.

D.B. *p*

Comp

Tape

193

B♭ Cl.

193

Tbn.

193

Pno.

193

Vln. 1

arco

mp

193

Vln. 2

mp

193

Vla.

193

Vc. 1

arco

mp

ordinario

193

Vc. 2

193

D.B.

193

Comp

Tape

201

B♭ Cl.

Tbn.

Pno.

mp

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc. 2

D.B.

Comp

Tape

C.L.T.

C.L.T.

C.L.T.

209
B♭ Cl.

209
Tbn. *Straight Mute*

209
Pno.

209
Vln. 1 *arco*

209
Vln. 2 *arco*

209
Vla. *arco*

209
Vc. 1 *arco*

209
Vc. 2 *arco*

209
D.B. *arco*

209	Comp	-	-	-	-	-	-
	Tape						

217 **G**

B♭ Cl.

Tbn. *No Mute*

Pno. *mf*

Vln. 1 *very slow bowing* *mp*

Vln. 2

Vla. *very slow bowing* *mp* *ordinario*

Vc. 1

Vc. 2

D.B.

Comp

Tape

225 [SH] []

B♭ Cl. *mf* *f*

Tbn. *mf*

Pno. *mf*

Vln. 1 *ppp* sul pont C.L.T.

Vln. 2 *p* Vibrato Senza Vibrato *ppp* C.L.T.

Vla. Vibrato Senza Vibrato *ppp* C.L.T.

Vc. 1 *ppp* C.L.T.

Vc. 2 *mf* *ppp* C.L.T.

D.B. *ppp* C.L.T. sul pont

Comp

Tape

^ mic ON

233

B♭ Cl.

PPP

3

233

Tbn.

PPP

3

233

Pno.

233

Vln. 1

5

233

Vln. 2

5

233

Vla.

233

Vc. 1

3

5

233

Vc. 2

5

3

233

D.B.

3

233	Comp	-	-	-	-	-	-	-
	Tape							
		v mic OFF						

B♭ Cl. ²⁴¹ *ppp*

Tbn. ²⁴¹ *ppp*

Pno.

Vln. 1 ²⁴¹

Vln. 2 ²⁴¹

Vla. ²⁴¹

Vc. 1 ²⁴¹

Vc. 2 ²⁴¹

D.B. ²⁴¹

Comp ²⁴¹

Tape

^ mic ON

v mic OFF

STOP

248

B♭ Cl.

248

Tbn.

248

Pno.

248

Vln. 1

p

very slow bowing

mf

C.L.T.

248

Vln. 2

mp

mf

C.L.T.

248

Vla.

very slow bowing

mp

p

C.L.T.

248

Vc. 1

p

mf

C.L.T.

248

Vc. 2

p

C.L.T.

248

D.B.

p

C.L.T.

248

Comp

248

Tape

^ mic ON

H

255

B♭ Cl.

255

Tbn.

255

Pno.

255

Vln. 1

mp

C.L.T.

255

Vln. 2

mp

C.L.T.

255

Vla.

p

arco

255

Vc. 1

pp

arco

255

Vc. 2

pp

arco

255

D.B.

mp

255

Comp

255

Tape

v mic OFF

264

B♭ Cl. *mf* *pp*

Tbn. *mf* *pp*

Pno. *mp*

264

Vln. 1 *mf* *pp* *mp* *mf*

Vln. 2 *mf* *pp* *mp*

Vla. *mf* *pp* *mf*

Vc. 1 *mf* *pp* *mp*

Vc. 2 *mf* *pp*

D.B. *mf* *pp*

C.L.T.

1/2 C.L.T.

264

Comp	-	-	-	8	-	-	-	-
Tape								

273 [SH]

B♭ Cl. *mf* *p*

Tbn. *mf* *p*

Pno.

Vln. 1

Vln. 2 *mp* *p*

Vla.

Vc. 1 *p*

Vc. 2 *mf* *p*

D.B. *p*

Comp

Tape

281 [O]
B♭ Cl. *mp*

281
Tbn. *mp*

281
Pno.

281
Vln. 1
C.L.T. extremely slow bow speed
1/2 C.L.T. Regular bow speed
ppp *p*

281
Vln. 2

281
Vla.
C.L.T. extremely slow bow speed
1/2 C.L.T. Regular bow speed
ppp *p*

281
Vc. 1

281
Vc. 2
C.L.T. extremely slow bow speed
1/2 C.L.T. Regular bow speed
ppp *p*

281
D.B.

281
Comp

281
Tape